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DHINGRA, PAWANDEEP	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,703	LI ET AL.	
	Examiner	Art Unit	
	Pawandeep S. Dhingra	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) *1,2,7,12,13 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawing Objections

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the complete features as disclosed in claims 1 (e.g. control image processing), 6 (e.g. filters, TRC's), 7 (e.g. de-screen filters), and claims 8-11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because in figure 2, there should be only one signal going to the element 12 from element 1, and after merging operation by element 26, there should only be one signal coming out and going to the printer according to the disclosure of the application. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see paragraph 0007 of applicant's disclosure). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 2, 7, 12, 13, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 & 12, recite the limitation "said image processing module" in part C, and in Part D, the claims recite "said image data". There is insufficient antecedent basis for this limitation in the claims.

Claims 2 & 13, recite the limitation "one or more characteristics", it is a relative term, which render the claims indefinite. The term "one or more characteristics" is not defined by the claims or the specification, and does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 7 & 18, recite "various cut-off frequencies" and "enhancement filters", both the terms "various" and "enhancement" are relative terms, which render the claims indefinite. The terms "various" and "enhancement" are not defined by the claims or the specification, and does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 4, 6, 8-9, 12, 14-15, 17, and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Karidi et al., US 6,590,676.

Re claim 1, Karidi discloses a method to improve quality of black and white images of tag-based color imaging systems in a color image path (see abstract, and figure 2A), comprising: a) receiving data processed from an input image (see step 30 in figure 2A); b) receiving image analysis tags associated with the pixels of said input image data (see steps 31-34 in figure 2A; column 5, line 54-column 6, line 7); c) providing said tags to each channel (i.e. RGB channels) of said image processing module to control image processing (see figures 2A-2B; column 1, line 64 – column 2, line 25), d) performing image processing on said image data to provide a video signal output thereof (see figure 1, 2A, 2B; column 2, lines 61-63; column 1, lines 40-44; column 3, lines 11-20, note that it is well known in the art and inherent from the disclosure of Karidi that the if the input is the video signal data (sequence of images), which is decompressed into RGB data (see step 19, figure 1), then the output must also

be a video signal data (sequence of images) AND can further be uncompressed into video signal per se, if desired (see column 3, lines 31-32)); e) replicating said video output signal on all output channels (i.e. RGB channels) of said image processing module (see step 20, figure 1); f) merging each video signal from each of said output channels based on the tags (see step 173, figure 3) *[also see figures 2A-2B, column 5, line 49 - column 6, line 37, note that just the b/w image signal (instead of single C, M, Y or K) can be sent as the input signal for image processing and it comes out as one signal in step 56, fig. 2, which is sent to the printer or memory, the process is repeated for each separation, so merging all signals together by memory or printer before printing is inherent]*; and g) outputting said merged video signal (see steps 20-23, figure 1; column 6, lines 35-37).

Re claim 3, Karidi further discloses the received data processed from said input image is obtained from a memory (see memory 14, figure 1, column 3, lines 10-20).

Re claim 4, Karidi further discloses said tags are generated in an image analysis module (i.e. image reconstruction path, figure 1) (see also column 3, lines 34-37).

Re claim 6, Karidi further discloses said image processing includes filtering, Tonal Reproduction Curves or TRCs, and rendering based (see column 4, lines 19-column 5, line 38).

Re claim 8, Karidi further discloses said image processing comprises multiple resources to enhance image quality (see abstract, column 2, lines 9-25).

Re claim 9, Karidi further discloses additional channel modes (i.e. RGB) are utilized in a CMYK image path for processing in 3-channel color space (see figure 1, and 3B; column 6, line 66-column 7, line 12).

Re claim 12, Karidi discloses a system for improving quality of black and white images of tag-based color imaging systems in a color image path (see abstract, and figure 2A), comprising: at least one processor in communication with a storage device (see figure 1, note that image reconstruction path is the processor); sufficient software and hardware (see figure 1) to perform: a) receiving data processed from an input image (see step 30 in figure 2A); b) receiving image analysis tags associated with the pixels of said input image data (see steps 31-34 in figure 2A; column 5, line 54-column 6, line 7); c) providing said tags to each channel (i.e. RGB channels) of said image processing module to control image processing (see figures 2A-2B; column 1, line 64 – column 2, line 25), d) performing image processing on said image data to provide a video signal output thereof (see figure 1, 2A, 2B; column 2, lines 61-63; column 1, lines 40-44; column 3, lines 11-20, note that it is well known in the art and inherent from the disclosure of Karidi that the if the input is the video signal data (sequence of images), which is decompressed into RGB data (see step 19, figure 1), then the output must also be a video signal data (sequence of images) AND can further be uncompressed into video signal per se, if desired (see column 3, lines 31-32)); e) replicating said video output signal on all output channels (i.e. RGB channels) of said image processing module (see step 20, figure 1); f) merging each video signal from each of said output channels based on the tags (see step 173, figure 3) *[also see figures 2A-2B, column 5, line*

49 - column 6, line 37, note that just the b/w image signal (instead of single C, M, Y or K) can be sent as the input signal for image processing and it comes out as one signal in step 56, fig. 2, which is sent to the printer or memory, the process is repeated for each separation, so merging all signals together by memory or printer before printing is inherent]; and g) outputting said merged video signal on (see steps 20-23, figure 1; column 6, lines 35-37); and h) a device for rendering said merged video signal (see step 23, figure 1).

Re Claim 14, claim 14 recites identical features, as claim 3, except claim 14 is a system claim. Thus, arguments made for claim 3 are applicable for claim 14.

Re Claim 15, claim 15 recites identical features, as claim 4, except claim 15 is a system claim. Thus, arguments made for claim 4 are applicable for claim 15.

Re Claim 17, claim 17 recites identical features, as claim 6, except claim 17 is a system claim. Thus, arguments made for claim 6 are applicable for claim 17.

Re Claim 19, claim 19 recites identical features, as claim 8, except claim 19 is a system claim. Thus, arguments made for claim 8 are applicable for claim 19.

Re Claim 20, claim 20 recites identical features, as claim 9, except claim 20 is a system claim. Thus, arguments made for claim 9 are applicable for claim 20.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be

> patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 11, 13, and 22 are rejected under 35 U.S.C. 103 as being unpatentable over Karidi et al., US 6,590,676 in view of Schweid et al., US 6,535,633.

Re claim 2, Karidi does not disclose the tags are determined from one or more characteristics of the image through segmentation.

However, Schweid et al. discloses the tags are determined from one or more characteristics of the image through segmentation (see column 2, lines 12-32; column 5, lines 13-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the image reconstruction architecture as disclosed by Karidi to include the method for classifying image pixels based on segmentation as taught by Schweid for the benefit of having *"an accurate and efficient segmentation of input image pixels into classes"* as taught by Schweid at column 4, lines 11-12.

Re claim 11, Karidi fails to disclose additional channel modes are utilized in a color image path for processing in 1-channel Black and White mode.

However, Schweid additional channel modes are utilized in a color image path for processing in 1-channel Black and White mode (see column 3, lines 38-47).

Re Claim 13, claim 13 recites identical features, as claim 2, except claim 13 is a system claim. Thus, arguments made for claim 2 are applicable for claim 13.

Re Claim 22, claim 22 recites identical features, as claim 11, except claim 22 is a system claim. Thus, arguments made for claim 11 are applicable for claim 22.

7. Claims 5, 10, 16, and 21 are rejected under 35 U.S.C. 103 as being unpatentable over Karidi et al., US 6,590,676 in view of Tse, US 5,572,599.

Re claim 5, Karidi does not explicitly disclose said tags describe for each pixel its classification (e.g., continuous tone, low frequency halftone, high frequency halftone, text, etc) (see steps 40-43 in figure 2A; column 5, line 66-column 6, line 11).

However, Tse also discloses said tags describe for each pixel its classification (e.g., continuous tone, low frequency halftone, high frequency halftone, text, etc) (see column 8, lines 15-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the image reconstruction architecture as disclosed by Karidi to include the method for describe for each pixel its classification based on tags as taught by Tse for the benefit of having *"image processing system for a monochrome printing system which is capable of scaling to include color functions without redesigning the system's architecture"* as taught by Tse at column 1, lines 8-13.

Re claim 10, Karidi fails to disclose a 4th channel provides resources for the luminance channel.

However, Tse discloses a 4th channel (i.e. extra channel) provides resources for the luminance channel (see column 6, lines 30-50).

Re Claim 16, claim 16 recites identical features, as claim 5, except claim 16 is a system claim. Thus, arguments made for claim 5 are applicable for claim 16.

Re Claim 21, claim 21 recites identical features, as claim 10, except claim 21 is a system claim. Thus, arguments made for claim 10 are applicable for claim 21.

8. Claims 7 & 18 are rejected under 35 U.S.C. 103 as being unpatentable over Karidi et al., US 6,590,676 in view of Kawano, US 6,897,983.

Re claims 7, Karidi further discloses de-screen filters (low-pass filters) and enhancement filters (i.e. text enhancement functional unit 50, see figure 2B) are applied to the image based on pixel classification (i.e. classification tags) (see column, lines 19-48, and figure 2A).

Karidi fails to disclose different de-screen filters with various cut-off frequencies

However, Kawano discloses different de-screen filters (i.e. low-pass filters, band-banded cut filters) with various cut-off frequencies for smoothing the images (see column 1, lines 40-63).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the image reconstruction architecture as disclosed by Karidi to include the image processor as taught by Kawano for the benefit of *"effectively suppressing moire appearance and an image processor which provides a simple edge emphasizing process for effectively emphasizing edges"* as taught by Kawano at column 3, lines 61-65.

Re Claim 18, claim 18 recites identical features, as claim 7, except claim 18 is a system claim. Thus, arguments made for claim 7 are applicable for claim 18.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, The application described figure 1 as prior art, which reads on the majority of dependent claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pawandeep S. Dhingra whose telephone number is 571-270-1231. The examiner can normally be reached on M-F, 9:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Lamb can be reached on 571-272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Pd
April 17, 2007

TWYLER LAMB
SUPERVISORY PATENT EXAMINER